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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Marios Gerogiokas

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Docket Administrator (Room 3J-219)
Lucent Technologies Inc.
101 Crawfords Corner Road
Holmdel, NJ 07733

EXAMINER

DANIEL JR, WILLIE J

ART UNIT

PAPER NUMBER

2686

DATE MAILED: 01/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/916,083	Applicant(s) GEROGIOKAS ET AL.	
	Examiner Willie J. Daniel, Jr.	Art Unit 2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to applicant's amendment filed on 27 October 2005. **Claims 1-17** are now pending in the present application.

Claim Objections

2. **Claims 1 and 12** are objected to because of the following informalities:
 - a. Claim 1 recites, "...to modify at least one angular extent..." in lines 8-9 of the claim.
 - b. Claim 12 recites, "...to modify at least one angular extent..." in line 6 of the claim.

The Examiner respectfully requests applicant to provide page(s), line(s), and drawing(s) of the instant application that supports the claimed features as well as any supportive comments.

Appropriate correction is required.

Regarding applicant's remarks on pg. 2, 2nd ¶, lines 3-6, "...describes assigning one or more beams to new sectors, which modifies at least one angular extent...", the Examiner respectfully disagrees. The sections cited by applicant on pg. 2, 2nd ¶, lines 5-6 fails to explicitly convey the feature "...to modify at least one angular extent..." as claimed by applicant. The instant application describes having three 120° sectors divide into for 30° sub-sectors in which the sectors are bounded by each other (see pg. 7, 1st ¶, lines 2-3; Fig. 2). At best, the sections cited by applicant only describe the transferring or switching of and amplifier. Therefore, the objections to the claims are maintained.

3. This list of examples is not intended to be exhaustive.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7, 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by **Ward et al.** (hereinafter Ward) (US 6,104,930).

Regarding **Claim 1**, Ward discloses of a beam on demand system comprising:

at least one transceiver (800) which reads on the claimed “radio” (see col. 8, lines 51 - col. 9, line 28; Fig. 8);

a plurality of amplifiers (802) each having an input switchably coupled with the at least one radio (800) by means of a matrix (e.g., switch matrix 801) and with at least one beam former (807), amplifier (802) having at least one output coupled to an antenna array (806) (see col. 8, lines 51 - col. 9, line 28; Fig. 8); and

a controller (805) for receiving an output transmission power level signal from each of the plurality of amplifiers (802), wherein the controller (805) generates a control signal to the switch matrix (801) for coupling or uncoupling an amplifier (802) to the at least one radio (800) to modify at least one angular extent of transmission associated with the radio, the control signal being based on the received output transmission power level of the amplifier and a threshold transmission power (see col. 7, lines 20-40; col. 8, lines 51 - col. 9, line 47; Figs. 8 and 10), where the power of one sector or beam is underutilized the power would be transferred to another sector or beam where the frequency and time slots have reached or

neared capacity limitations (threshold) in which the equipment floats between sectors or beams. Also, the angular beam width changes according to demand (see col. 9, line 55 - col. 10, line 3; Figs. 7 and 9).

Regarding **Claim 2**, Ward discloses the beam on demand system of claim 1 where the controller (805) couples or uncouples an amplifier (802) from the at least one radio (800) based on whether the received transmission power of the amplifier is above or below the threshold transmission power (see col. 7, lines 20-40; col. 8, lines 51 - col. 9, line 47; col. 9, line 55 - col. 10, line 53; Figs. 7-10), where the power demand of a sector is allocated to additional transceivers to handle the demand of the sector which is above capacity (threshold) and the transceiver is borrowed from a sector that is below the capacity limit.

Regarding **Claim 3**, Ward discloses where the amplifier (802) and a corresponding antenna element of the antenna array (806) are coupled or uncoupled to or from the at least one radio (800) (see col. 7, lines 20-40; col. 8, lines 51 -col. 9, line 28; col. 9, line 55 - col. 10, line 53; Figs. 7-10).

Regarding **Claim 4**, Ward discloses where the digital communication signal which reads on the claimed "control signal" is based on the transmission power level of a group of which the amplifier (802) is a member and a threshold transmission power level established for the group (see col. 8, line 51 - col. 9, line 47; col. 10, lines 10-22; Fig. 8), where the communication signal provides transmission power according to the frequency or capacity limit (threshold) in which additional frequencies will be used to carry the overloaded traffic.

Regarding **Claim 5**, Ward discloses where the control signal is based on the transmission power level of the amplifier and a threshold transmission power established for

the amplifier (see col. 8, line 51 - col. 9, line 47; col. 10, lines 10-22; Figs. 8-9), where the communication signal provides transmission power according to the frequency or capacity limit (threshold) in which additional frequencies will be used to carry the overloaded traffic.

Regarding **Claim 7**, Ward discloses where the at least one radio (800) is switchably coupled with a set of amplifiers from the plurality of amplifiers (802) and an amplifier (802) is either removed from the set or added to the set based on the threshold transmission power of the set and the transmission power of the amplifier to be added or removed (see col. 7, lines 20-40; col. 8, lines 51 -col. 9, line 47), where the transceiver and amplifier will switch from one sector to another sector to provide additional power when the communication signals have reached the capacity limit.

Regarding **Claim 9**, Ward discloses where each amplifier (802) output is coupled to an antenna element of the antenna array (806) (col. 8, lines 51 - col. 9, line 28; Figs. 8), where the output from the amplifier passes to the antenna.

Regarding **Claim 10**, Ward discloses where the switch matrix (801) has N inputs and M outputs where N and M are integers equal to 1 or greater and M is greater than N (see col. 7, lines 20-40; col. 8, lines 51 - col. 9, line 47; col. 9, line 55 - col. 10, line 53; Figs. 7-10), where the switch matrix has more than one input and output in which the ratio can be adjusted according to capacity demands.

Regarding **Claim 11**, Ward discloses where the system serves a cell that is part of a wireless communication system (see col. 7, lines 48-50; Figs. 7 and 9).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Ward et al.**

(hereinafter Ward) (**US 6,104,930**) in view of **Feuerstein et al.** (hereinafter Feuerstein) (**US 6,141,565**).

Regarding **Claim 6**, Ward discloses where the demand of a sector can reach a capacity limitation (threshold) (see col. 7, lines 20-40; col. 8, lines 51 - col. 9, line 47; col. 9, line 55 - col. 10, line 53; Figs. 7-10), where the additional power from amplifiers will be provided to sectors or beams to handle additional traffic with the allocated frequencies. Ward fails to disclose the feature the threshold being calculated. However, the examiner maintains that the feature threshold being calculated was well known in the art, as taught by Feuerstein.

In the same field of endeavor, Feuerstein discloses the feature the parameters (threshold) being calculated (see col. 2, lines col. 7, line 56 - col. 8, line 23; Figs. 1-4), where the controller establishes the threshold for power used by the base station to distribute power for the sectors.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Ward and Feuerstein to have the feature the threshold being calculated, in order to provide parameters that will optimize and

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dynamically adjust a network, cell, sector, or beam to handle traffic loading conditions, as taught by Feuerstein (see - col. 4, line 66 - col. 5, line 18; col. 11, lines 13-25).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Ward et al.** (hereinafter Ward) (**US 6,104,930**) in view of **Lopes et al.** (hereinafter Lopes) (**US 6,453,176 B1**).

Regarding **Claim 8**, Ward teaches of having a controller (805) for operating the frequency switch and combiner matrix (801) which distribute communication signals (col. 8, lines 51 - col. 9, line 28; Figs. 8), where the transmitters are capable of outputting a multiplexed digital communication signal through communication channels. Ward fails to disclose the feature the controller being a digital signal processor. However, the examiner maintains that the feature the controller being a digital signal processor was well known in the art, as taught by Lopes.

Lopes further discloses the feature the controller being a digital signal processor (see col. 4, lines 44-47), where the controller controls the switches.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Ward and Lopes to have the feature the controller being a digital signal processor, in order to have beams of used for resource allocation where users can be served by a different beam of each sector within a cell, as taught by Lopes (see col. 8, lines 1-14; Fig. 6).

Claims 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Smith et al.** (hereinafter Smith) (**US 5,021,801**) in view of **Ward et al.** (hereinafter Ward) (**US 6,104,930**).

Regarding **Claim 12**, Smith discloses a method for automatically allocating system equipment of a communication system (see abstract; Figs. 2-5), the method comprising the steps of:

providing equipment so as to serve various sectors (303) which reads on the claimed “portions” of the communication system (see abstract; Figs. 2-5);

monitoring the equipment to determine capacity demands of the various portions (303) (see col. 3, lines 34-42; Figs. 2 and 3), where the system monitors the capacity to determine when a sector has become overburdened ; and

switching equipment between portions (303) of the communication system using a switch matrix (203) to meet the capacity demands of the various portions (303) (see col. 3, lines 34-42; Figs. 2 and 3), where the transmitter from a under used sector would switch to support another overburdened sector to help handle traffic. Smith fails to disclose having the feature to modify at least one angular extent of the various portions served by the equipment.

However, the examiner maintains that the feature to modify at least one angular extent of the various portions served by the equipment was well known in the art, as taught by Ward.

Ward further discloses the feature to modify at least one angular extent of the various portions served by the equipment (see col. 7, lines 20-40; col. 8, lines 51 - col. 9, line 47; Figs. 8 and 10), where the power of one sector or beam is underutilized the power would transferred to another sector or beam where the frequency and time slots have reached or

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neared capacity limitations (threshold) in which the equipment floats between sectors or beams. Also, the angular beam width changes according to demand (see col. 9, line 55 - col. 10, line 3; Figs. 7 and 9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Smith and Ward to have the feature to modify at least one angular extent of the various portions served by the equipment, in order to overcome the trunking inefficiency experienced in cellular radio systems using a plurality of narrow directional beams, as taught by Ward (see col. 3, lines 34-36).

Regarding **Claim 13**, the combination of Smith and Ward discloses every limitation claimed, as applied above (see claim 12), in addition Smith further discloses the method of claim 12 where the step of monitoring equipment further comprises establishing capacity thresholds for the various portions of the communication system (see col. 3, lines 34-42; Figs. 2 and 3), where the threshold would be inherent when the overburdened sector reached a capacity limit or threshold for requesting assistance from another transmitter sector.

Regarding **Claim 14**, the combination of Smith and Ward discloses every limitation claimed, as applied above (see claim 12), in addition Smith further discloses the method of claim 12 where the step of monitoring equipment further comprises establishing a capacity threshold for each of the provided equipment (see col. 3, lines 34-42; Figs. 2 and 3), where the system monitors the amount of traffic to determine the capacity limitations (threshold) when a sector has become overburdened.

Regarding **Claim 15**, the combination of Smith and Ward discloses every limitation claimed, as applied above (see claim 12), in addition Smith further discloses the method of

claim 12 where the step of switching equipment between portions (303) of the communication system comprises automatically transferring a provided equipment from one portion (303) to another portion (303) to meet the capacity demands of one or both of the portions (303) (see col. 3, lines 34-42; Figs. 3-5), where the transmitter of one sector is switched from to another sector to assist with handling the traffic in the overburdened the sector.

Regarding **Claim 16**, the combination of Smith and Ward discloses every limitation claimed, as applied above (see claim 12), in addition Smith further discloses the method of claim 12 where the step of switching equipment between portions of the communication system further comprises the steps of:

determining the capacity demand of the portion (303) of the communication system to which equipment is switched (see col. 3, lines 34-42; Figs. 3-5), where the system determines that for the sector a capacity demand and the sector is overburdened; and

switching the equipment to the portion (303) when the capacity demand of the portion (303) is calculated to be below an established capacity threshold even after the equipment has been switched (see col. 3, lines 34-42; Figs. 3-5), where the transmitter is switched in accordance to the overburdened capacity demand to assist with handling traffic.

Regarding **Claim 17**, Smith discloses where the equipment being switch are amplifiers (205) coupled to antenna elements (404) and the amplifiers are switchably coupled with at least one radio (401) and switch matrix (402) wherein capacity demands are represented by transmission power levels of the amplifiers and the various portions are sectors and/or sub-sectors of a cell of a wireless communication system (see col. 2, line 38 -

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col. 3, line 6; col. 3, line col. 3, lines 38-47; Figs. 2, 4, and 5), where the equipment is switched to handle traffic between sectors of a cell. Smith fails to disclose having the features elements of an antenna array; the equipment coupled by means of beam former. However, the examiner maintains that having the features elements of an antenna array; the equipment coupled by means of beam former was well known in the art, as taught by Ward.

Ward further discloses of having the features elements of an antenna array (806) (see Fig. 8); the equipment coupled by means of beam former (807) (see Fig. 8), where the equipment is used to handle communication between sectors or beams of a cell.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Smith and Ward to have the features elements of an antenna array; the equipment coupled by means of beam former, in order to modify at least one angular extent of the various portions served by the equipment, in order to overcome the trunking inefficiency experienced in cellular radio systems using a plurality of narrow directional beams, as taught by Ward (see col. 3, lines 34-36).

Response to Arguments

6. Applicant's arguments filed 27 October 2005 have been fully considered but they are not persuasive.

The Examiner respectfully disagrees with applicant's arguments as the applied reference(s) provide more than adequate support and to further clarify (see the above claims and comments in this section).

7. Regarding applicant's remarks on pg. 2, 2nd ¶, lines 3-6, "...describes assigning one or more beams to new sectors, which modifies at least one angular extent...", the Examiner respectfully disagrees. The sections cited by applicant on pg. 2, 2nd ¶, lines 5-6 fails to explicitly convey the feature "...to modify at least one angular extent..." as claimed by applicant. The instant application describes having three 120° sectors divide into for 30° sub-sectors in which the sectors are bounded by each other (see pg. 7, 1st ¶, lines 2-3; Fig. 2). At best, the sections cited by applicant only describe the transferring or switching of an amplifier. Therefore, the objections to the claims are maintained.

8. Regarding applicant's argument of claim 1 on pg. 2, 3rd ¶, lines 1-2, "...Ward describes modifying at least on angular extent of transmission with the radio...disagree...", the Examiner respectfully disagrees. Ward further discloses the feature to modify at least one angular extent of the various portions served by the equipment (see col. 7, lines 20-40; col. 8, lines 51 - col. 9, line 47; Figs. 8 and 10), where the power of one sector or beam is underutilized the power would transferred to another sector or beam where the frequency and time slots have reached or neared capacity limitations (threshold) in which the equipment floats between sectors or beams. Also, the angular beam width changes according to demand

(see col. 9, line 55 - col. 10, line 3; col. 7, lines 48-60; Figs. 7 and 9), where different number of beams can be configured for the radiation coverage of an azimuth (e.g., angle) of a sector. The system allows for the equipment to float in order to support the different capacity demands between the sectors, for example, a partially loaded sector can free-up resources to a sector with high traffic.

9. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Regarding applicant's remark on pg. 3, 3rd ¶, lines 2-3, "...Ward describes four **spatially fixed** downlink radiation beams...". The instant application recites a quite similar description (see pg. 7, 1st ¶, lines 2-3; Fig. 2), which describes having three 120° sectors divide into for 30° sub-sectors in which the sectors are bounded by each other. In addition to four radiation beams, Ward also describes having seven beams to cover a sector which addresses having a different angular responsibility for the beams (see col. 9, lines 58-64; Figs. 7 and 9). Also, the spatially fixed feature describes the separation of frequencies to minimize interference (see col. 8, lines 6-10) in which the feature would be a recognized aspect by one of ordinary skill in the art.

10. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves

or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the applicant is requested to view items 8-9 of this section as well as the motivation(s) provided in the rejections applied above.

11. Regarding applicant's arguments of claims 2-17, the claims are rejected for the same reasons as set forth above.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Willie J. Daniel, Jr. whose telephone number is (571) 272-7907. The examiner can normally be reached on 7:30-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WJD,JR
10 January 2006



CHARLES APPIAH
PRIMARY EXAMINER